FutureGen™ ALLIANCE

Clean Energy for a Secure Future

FutureGen
The Right Project at the Right Time

Presentation to California Energy Commission
EPAG PIER Program

Mike Mudd, CEO

May 29 2007

Serious climate strategies require major advances in technology

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- Overwhelming evidence that:
  - **The scale of the global energy system is immense and growing**
  - **Energy conversation is an incredibly important tool, which society must use, but it is well-proven that it is physically impossible to "conserve" our way to a complete solution**
  - **Fossil fuels are affordable, abundant, and, on a global basis, will be used**
  - **Advanced technology can substantially reduce the cost of managing CO_2 emissions**
  - **None of the commonly discussed technologies--renewables, biomass, nuclear, fossil with sequestration, or others can address the challenge alone. All options are required at a megascale**
  - **RD&D are required to reduce the cost and improve the performance of new technologies**
  - **The next ten years is a critical window in which to prove advanced technologies**

Coal-fueled power coupled with sequestration offers great promise

- Carbon capture and sequestration recognized as a key part of the solution
  - 2005 IPCC technical report concluded it is highly probably that, on a global basis, there are adequate geologic formations to store centuries worth of CO_2
  - Leading environmental groups have been strongly supportive of the technology
  - National Energy Policy Commission recommended large-scale demonstrations

- **However, it must be proven**:
  - at a commercial-scale
  - in multiple places around the globe
  - immediately

I want my kids to get their electricity from domestic Clean Coal

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Gas producers to study pricing, feasibility of forming cartel

Monday, Apr 9, 2007

Wall Street Journal

DOHA, Qatar -- A group of major natural-gas producers and exporters are uniting in a bid that could be a prelude to the eventual formation of another world energy cartel.

On the first day of their two-day meeting here, the 14 members of the Gas Exporting Countries Forum decided to form a commission to study pricing policies to help determine the feasibility of forming an active and exporters´ group like the Organization of Petroleum Exporting Countries.

"In the long run, yes, we are moving toward a gas OPEC," Chakib Khelil, Algeria´s oil minister, said. But Mr. Khelil said it would take a "long time" before gas markets were liquid enough that such a group could be formed.

Many of the members, including Qatar, Iran, Venezuela, Libya and Indonesia, are also members of OPEC, and they were receptive to the idea of forming a similar group that could allocate market shares and defend the price of gas.

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Right Technology at the Right Time

- World's first, near-zero emission coal-fueled power plant
- More than one million tons of CO_2 captured and sequestered annually in a deep saline geologic formation
- "Living laboratory" to test and validate cutting-edge power, sequestration, and monitoring technologies
- Global public-private partnership
- Stakeholder involvement

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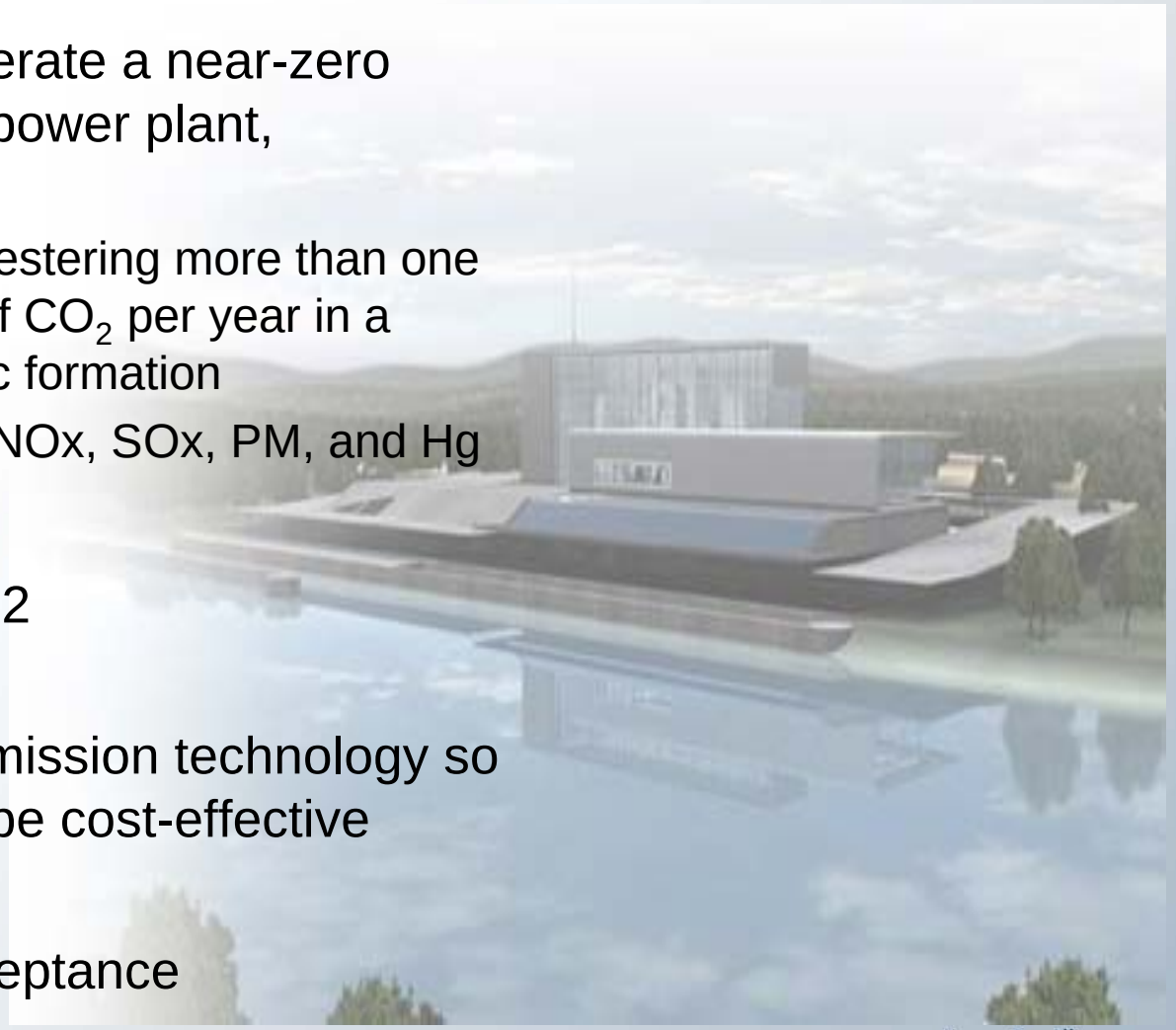
Clear Objectives

- Design, build, and operate a near-zero emission coal-fueled power plant, including:
  - Capturing and sequestering more than one million metric tons of CO_2 per year in a deep saline geologic formation
  - Near-zero levels of NOx, SOx, PM, and Hg
- Facility on-line by 2012
- Advance near-zero emission technology so that future plants will be cost-effective
- Build stakeholder acceptance



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Why our nation needs FutureGen

- Unique opportunity to prove carbon injection in deep geological formations
  - Must differentiate from Enhanced Oil Recovery
  - Legal and regulatory framework does not exist for geological injection
- Unique opportunity to advance IGCC Technology
  - Project not driven by business considerations that lead to risk-adverse design selections
- There is no IGCC project with CCS as far developed as FutureGen
  - R&D nature removes cost recovery requirements as is the case with other announced projects
- International participation in FutureGen will facilitate implementation of CCS technologies emerging economies

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Right Partners

- Industry
  - Twelve leading companies with operations on six continents
  - The Alliance is a non-profit 501c3 organization
- Governments
  - United States, China, India, South Korea, and Japan
- Partners
  - Technical support from Battelle - a world-class R&D organization
  - Engaged with world-class technical experts
  - Engineering support from world-class EPC firms
- Uniquely positioned to build global acceptance of near-zero emission coal technology

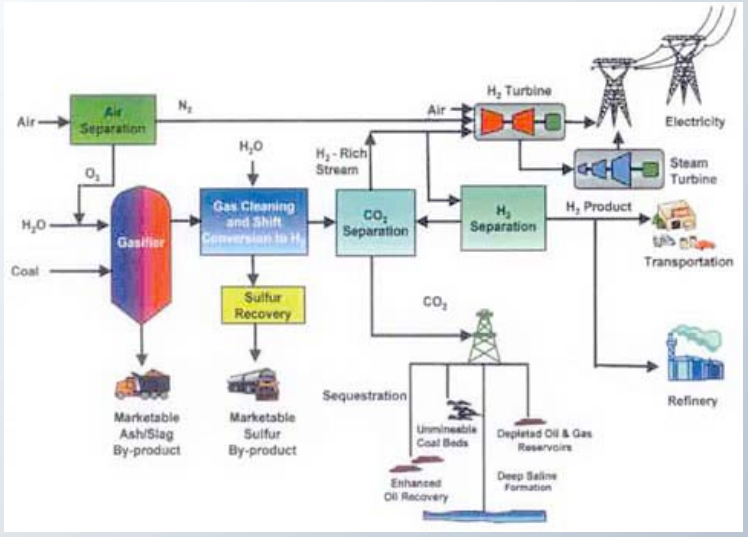
*1Q 2004$

www.FutureGenAlliance.org

FutureGen Technology

Advances IGCC Technology

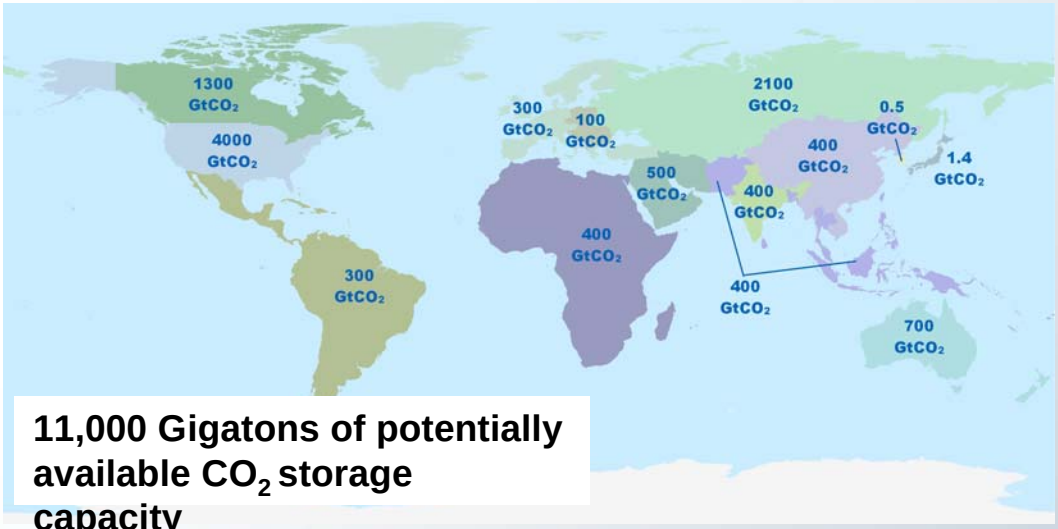
- Designed to gasify eastern and western U.S. coals, and test other coals, which expands the global applicability of environmentally-friendly IGCC technology
- Advances gasification, hydrogen turbine, and other clean-coal technologies
- Integrates CO_2 capture at a commercially-relevant scale into a IGCC power plant
- Addresses power plant operation with CO_2 capture, transport, and sequestration integration



FutureGen Technology

Advances Sequestration Technology

- Focused on deep geologic formations which are globally available
- Extensive modeling and monitoring program planned to verify the safety and permanence of CO_2 storage



11,000 Gigatons of potentially available CO_2 storage capacity

FutureGen
Site Selection

FutureGen Progress

Site Selection

- First-of-a-kind siting methodology developed
- Can be extended to future commercial near-zero emission power plant projects around the world
- Final site to be selected by September

Mattoon, IL

Tuscola, IL

Brazos, TX

Odessa, TX

FutureGen Progress

Conceptual Design

- Multiple alternative power plant design options evaluated
- Facility concept that is fuel-flexible developed
- Conceptual engineering designs and costs estimates on three power plant configurations prepared
- Engineering Construction Manager on board
- Open competition to purchase major equipment currently being developed

FutureGen Progress

Environmental Impact Statement

- Three volume, 2000+ page analysis of the potential environmental impacts
  - Summary
  - Volume I – Introduction, Alternatives, Summary of Conclusions
  - Volume II – Affected environment and environmental consequences at each site
- Draft EIS concludes no significant adverse impacts
- Public hearings and comment June

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Draft Environmental Impact Statement

May 2007

FutureGen
Project Cost

Total Net Project Cost: $1.5B		
Federal Cost Share	**74%**	**$1,105M**
Alliance Cost Share	**24%**	**$379M***

*Costs expressed in future, as-spent dollars. DOE's NEPA costs are 100% DOE funded.

FutureGen Progress

Project Cost and Schedule

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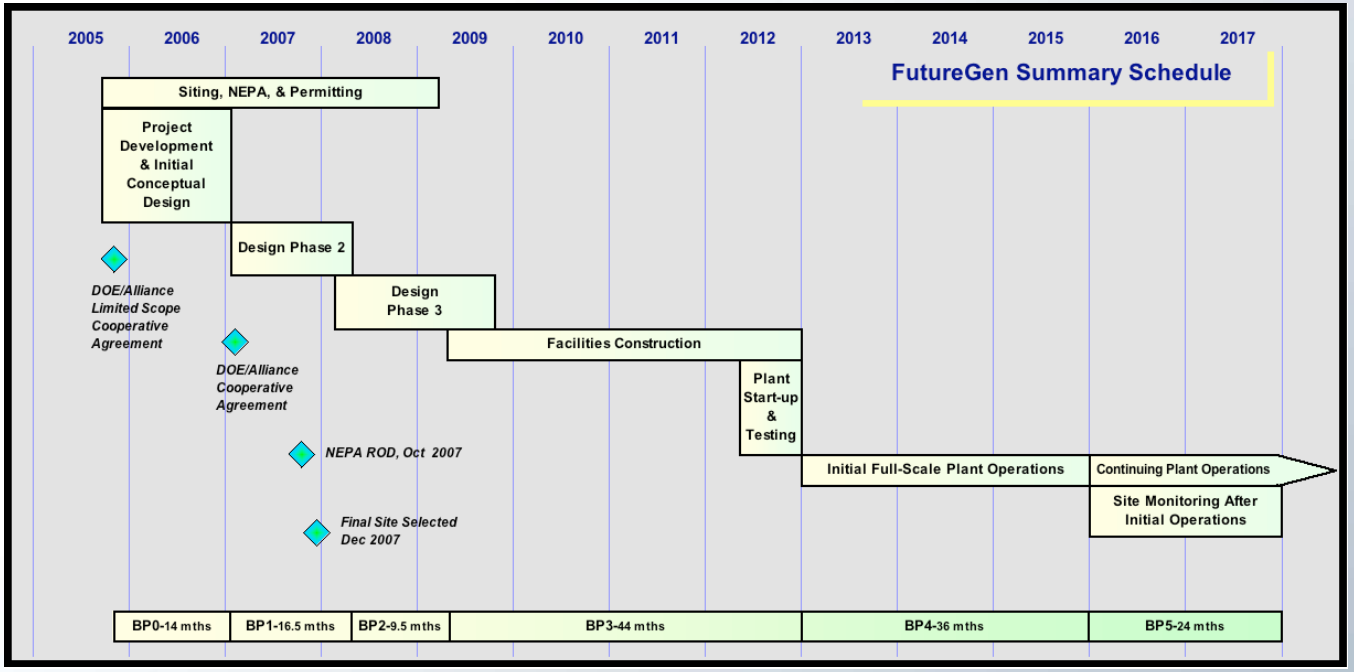

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Current Activities

- Finalizing Engineering Construction Management contract
- Kick-off of preliminary design
- Technology due diligence
- Development of technology specifications
- Site due diligence
- Finalizing offers from four sites
- EIS public hearings

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Summary

- Supports a *technology-based climate change strategy*
  - Mitigates the financial risks of carbon dioxide emissions
- *Validates the cost and performance* of an integrated near-zero emission coal-fueled power plant
  - Advances IGCC technology
  - Advances carbon capture, sequestration, and hydrogen-production technologies
  - Sets groundwork for CO2 sequestration siting and licensing
- Creates the technical basis to *retain coal* in U.S. and global energy mix with a long-term goal of *zero emissions*.
- Enables the public and private sector to *share the cost and risk* of advanced technology demonstration.
  - Platform for emerging technology demonstration.

- ## Acknowledgement

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- ## Disclaimer